

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

Please amend the claims as shown:

1. (Previously Presented) A stereo matching apparatus comprising:

a stereo camera system for taking pictures of a predetermined area and producing first and second images of the predetermined area;

a memory for storing first image data within a reference pixel region in the first image and second image data on a horizontal line in the second image, the horizontal line being corresponding to a vertical position of the reference pixel region in the first image;

a correction table for storing values based on a calibration process carried out with respect to the stereo camera system;

an address generator for setting a search range in the second image for a stereo matching and instructing to read out from said memory a part of the second image data within the search range and the first image data within the reference pixel region, the search range being set according to a value read from the correction table; and

a stereo matching unit for identifying a correlated destination of the reference pixel region by the stereo matching based on the part of the second image data within the search range and the first image data within the reference pixel region and calculating a parallax of the reference pixel region based on the correlated destination of the reference pixel region,

wherein the value read from the correction table is indicative at least in part of an amount of deviation of an infinite distance corresponding point with respect to a horizontal

position of the reference pixel region, said amount being individually set for each reference pixel region in the first image so as to set the search range in the second image in relation to each reference pixel region in the first image.

2. (Original) The stereo matching apparatus as recited in claim 1, wherein said address generator shifts the location of the search range in the same direction as a direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

3. (Original) The stereo matching apparatus as recited in claim 2, wherein said address generator shifts a starting point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point.

4. (Original) The stereo matching apparatus as recited in claim 2, wherein said address generator shifts an end point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point.

5. (Original) The stereo matching apparatus as recited in claim 1, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

6. (Original) The stereo matching apparatus as recited in claim 2, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

7. (Original) The stereo matching apparatus as recited in claim 3, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

8. (Original) The stereo matching apparatus as recited in claim 4, wherein said address generator identifies the amount of correction of the search range in relation to the amount of deviation of the infinite distance corresponding point.

9. (Original) The stereo matching apparatus as recited in claim 2, further comprising:

a correction value memory for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image;

wherein said address generator sets the location of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region.

10. (Original) The stereo matching apparatus as recited in claim 3, further comprising:

a correction value memory for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image;

wherein said address generator sets the starting point of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region.

11. (Original) The stereo matching apparatus as recited in claim 1, wherein said stereo camera system comprises a pair of stereo cameras mounted on a vehicle, the pair of stereo cameras taking pictures of scenes outside of the vehicle, and said stereo matching unit calculates a distance to an object outside the vehicle on the basis of the parallax of the reference pixel region.

12. (Previously Presented) A stereo matching method comprising:

- taking pictures of a predetermined area and producing first and second images of the predetermined area;
- identifying a reference pixel region in the first image;
- identifying a search range for the reference pixel region in the second image;
- defining a search range for the reference pixel region based on a previously determined and stored value representing an amount of deviation of an infinite distance corresponding point with respect to position of the reference pixel region;
- identifying a correlated destination of pixel region by searching a horizontal the reference through the search range; and
- wherein said amount is individually set for each reference pixel region in the first image so as to set the search range in the second image in relation to a position of the reference pixel region in the first image.

13. (Original) The stereo matching method as recited in claim 12, wherein said step of correcting the location of the search range shifts the location of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

14. (Original) The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range shifts a starting point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

15. (Original) The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range shifts an end point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region.

16. (Original) The stereo matching method as recited in claim 12, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

17. (Original) The stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

18. (Original) The stereo matching method as recited in 14, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

19. (Original) The stereo matching method as recited in 15, wherein said step of correcting the location of the search range corrects the location of the search range with a correction value corresponding to the deviation of the infinite distance corresponding point.

20. (Original) The stereo matching method as recited in claim 12, further

comprising:

calculating a distance to an object outside a vehicle on the basis of the correlated destination of the reference pixel region,

wherein said step of taking pictures of the predetermined area takes pictures of scenes outside of the vehicle.

21. (Original) The stereo matching method as recited in claim 12, further comprising:

taking picture of a screen by a pair of stereo cameras and producing third and fourth images of the screen, said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras;

identifying a deviation of a position of the second vertical line shown on the fourth image with respect to a position of the first vertical line shown on the third image; and

calculating an infinite distance corresponding point corresponding to each position on the first vertical line shown on the third image on the basis of the deviation of the position of the second vertical line,

wherein said step of correcting the location of the search range uses the infinite distance corresponding point thus calculated as the infinite distance corresponding point corresponding to the horizontal position of the reference pixel region.

22. (Previously Presented) A method of calculating an infinite distance corresponding point, the method comprising:

taking picture of a screen by a pair of stereo cameras and producing first and second images of the screen, said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras;

identifying a deviation of a position of the second vertical line shown on the second image with respect to a position of the first vertical line shown on the first image; and  
calculating each infinite distance corresponding point corresponding to each position on the first vertical line shown on the first image on the basis of the deviation of the position of the second vertical line.

23. (Currently Amended) A stereo matching apparatus comprising:

a stereo camera system for taking pictures of a predetermined area and producing first and second images of the predetermined area;

a reference pixel region identifying unit for identifying a reference pixel region in the first image;

a search range identifying unit for identifying a search range for the reference pixel region in the second image;

a correction unit for correcting a location of the search range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point with respect to a horizontal position of the reference pixel region; and

a correlated destination identifying unit for identifying a correlated destination of the reference pixel region by searching through the search range,

wherein said amount is individually set for each reference pixel region in the first image so as to set the search range in the second image in relation to a position of the reference pixel region in the first image.

24. (Previously Presented) The stereo matching apparatus according to claim 1, wherein:

the stereo camera system takes a picture of a screen by a pair of stereo cameras

and produces third and fourth images of the screen with being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras;

the apparatus calculates a deviation of apposition of the second vertical line shown on the fourth image with respect to a position of the first vertical line shown on the third image and an infinite distance corresponding point corresponding to each position on the first vertical line shown on the third image on the basis of the deviation of the position of the second vertical line.